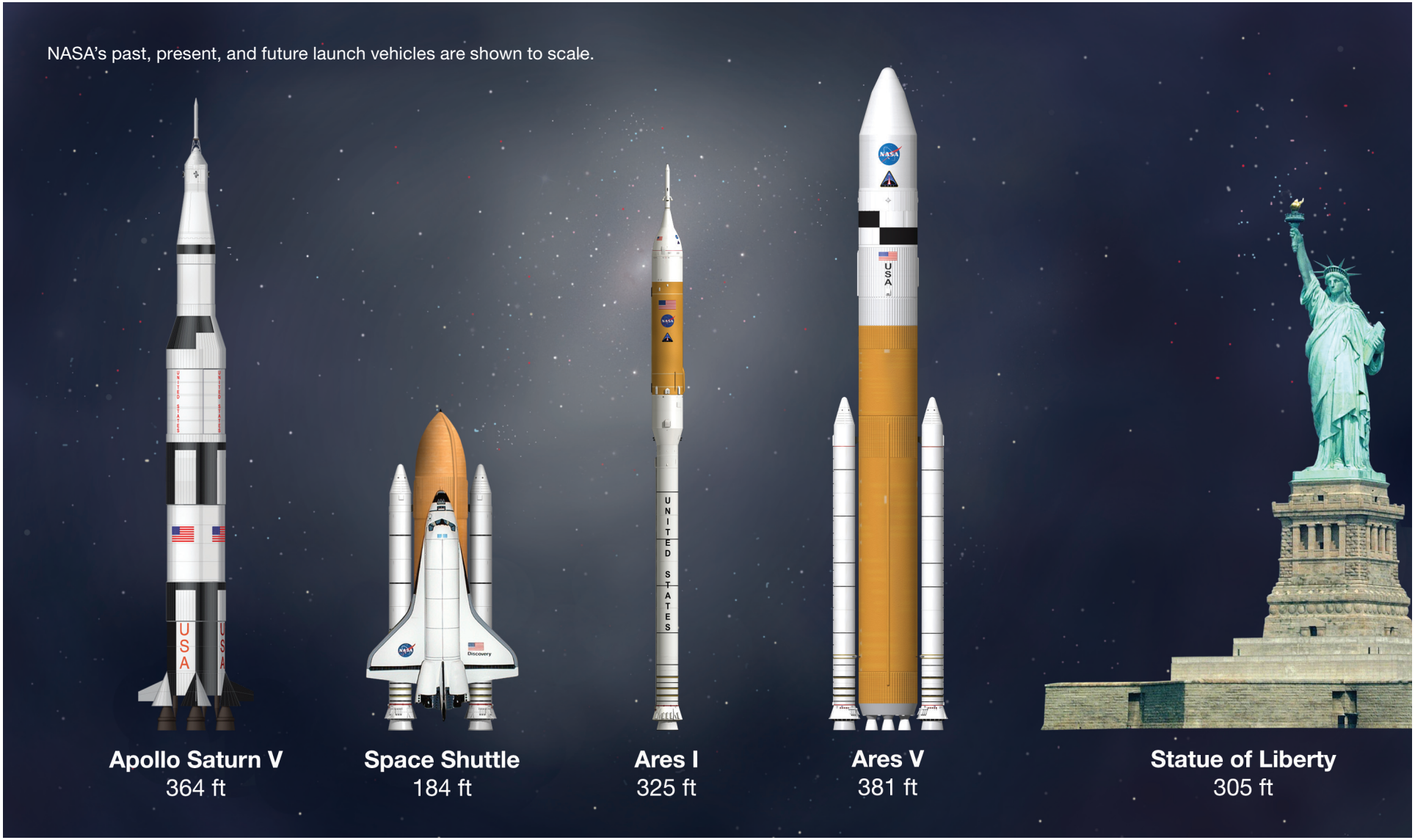
National Aeronautics and Space Administration



Building on a Powerful Foundation for Future Missions

NASA's Ares Projects — Building on a Powerful Foundation for Future Missions

NASA is building a new generation of launch vehicles based on a foundation of hard-won experience and proven, reliable hardware to increase the probability of mission success.

NASA's know-how will enable America to build a permanent outpost on the Moon to prepare for the first human footprint on Mars. NASA's crew launch vehicle — the Ares I — and cargo launch vehicle — the Ares V — will transport astronauts and heavy equipment to orbit for journeys to the Moon, Mars, and beyond.

On Solid Footing

To make these new launch systems safer and simpler, NASA is using proven technologies from the Apollo Saturn V, Space Shuttle and other launch vehicles. Common propulsion elements between the two systems will reduce operations costs to promote the long-term investigation of Earth's cosmic neighborhood and worlds beyond.

The Ares I includes a five-segment first stage evolved from the Shuttle's reusable solid rocket booster and an upper stage powered by a J-2X engine, with heritage from the Saturn V. The Ares I will carry the Orion crew exploration vehicle to Earth orbit.

The Ares V propulsion includes two five-and-a-half-segment solid rocket boosters, much like the booster used in the Ares I's first stage. It also uses six commercial RS-68 engines fueled by a 33-foot-diameter tank that will be longer than the Saturn V first stage. The Earth departure stage, which transports the Altair lunar lander and Orion toward the Moon, is powered by a J-2X engine, the same engine used for the Ares I's upper stage.

In this artist's concept, an astronaut gathers samples on the surface of Mars, while a robotic explorer stands by to help. The Global Exploration Strategy calls for human and robotic missions that will return to the Moon and eventually explore Mars and beyond.

Learning From Space

The Ares I will loft astronauts in the Orion to the *International Space Station* by 2015. Late next decade, the Ares I and Ares V combination will empower a new age of exploration, beginning with America's establishment of an outpost on the Moon to prepare for longer trips to Mars.

Safe, reliable, affordable launch vehicle systems will help NASA focus its resources on the cutting-edge science that space transportation makes possible.

For more information see: **www.nasa.gov/ares**

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